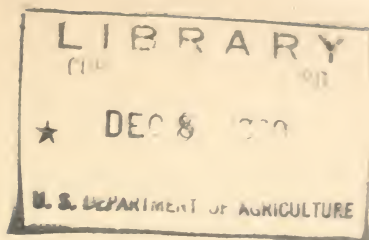


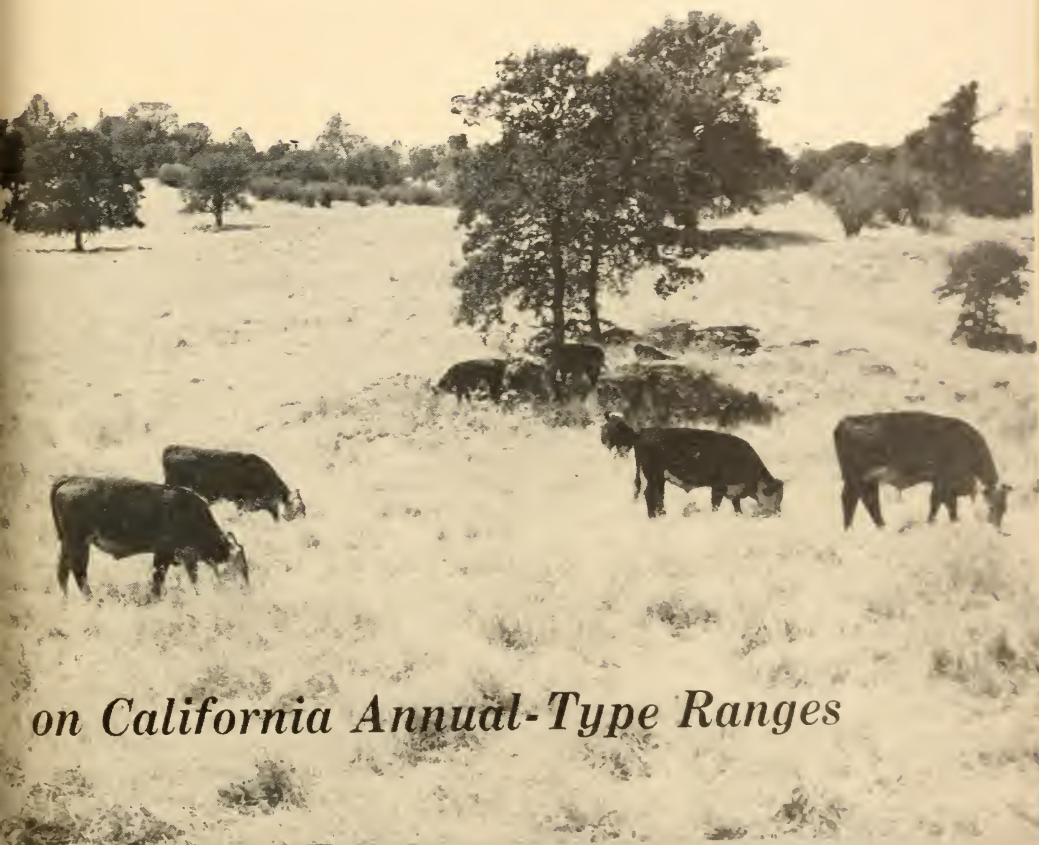
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MODERATE GRAZING PAYS



on California Annual-Type Ranges

Leaflet No. 239

Forest Service

U. S. DEPARTMENT OF AGRICULTURE

SUSTAINED HIGH PRODUCTION from livestock ranges is needed to supply the growing demand for meat and hides.

MODERATE GRAZING sustains high level production and maintains good condition on annual-type ranges.

MODERATE GRAZING PAYS

on California Annual-Type Ranges¹

By August L. Hormay, research forester, Pacific Southwest Forest and Range Experiment Station, Forest Service

Steady supplies of animal products are needed to fill present and future demands. These demands can best be met on annual-type ranges by grazing moderately—for moderate grazing makes best use of the range vegetation and produces high livestock returns without impairing future production.

Experiments have shown that the weight gains and condition of cattle on California annual-type ranges depend a great deal on how closely the range is grazed. On moderately and lightly grazed ranges both cows and calves gained more weight and were in better condition during the period from January to August, which includes the main green-forage season, than comparable cattle on heavily grazed ranges. Heavy grazing proved detrimental both to the cattle and to the range. These results are important in California where annual-type ranges cover more than 25 million acres in the Central Valley and coastal areas and support most of the livestock for a large part of the year.

Moderate grazing should not be confused with light grazing. Range in good condition should not be grazed too lightly. Light grazing on good range fails to use all available forage for the production of

meat and also encourages the growth of less desirable plants. Light grazing, however, is desirable on range in poor or fair condition so as to encourage rapid improvement.

Soil Fertility Improved

Under moderate use enough plant growth is left on the ground each season to maintain and improve soil fertility. Organic matter is added to the soil. Also this cover of dry vegetation protects the soil from the direct action of rain, wind, sunshine, and other forces that cause erosion or lower fertility. Under heavy use, too much vegetation is removed. This exposes the soil surface to erosion and permits the loss of topsoil, thus reducing the capacity of the range to produce nutritious herbage.

Better Mixture of Range Plants

The amount of dry plant residue left on the ground partly determines the proportion of the different kinds of forage plants that grow in following years. Under moderate grazing, grasses and forbs tend to grow in about equal amounts. Both of these classes of plants are needed in the cover. The grasses—such as wild oats, soft chess, and annual fes-

¹This leaflet is based largely on experiments carried out at the San Joaquin Experimental Range by the Forest Service, U.S. Department of Agriculture, in cooperation with the University of California and other agencies. Detailed records of these experiments are given in University of California Bulletin 663, The San Joaquin Experimental Range, which can be obtained from the University or from the Pacific Southwest Forest and Range Experiment Station at Berkeley, and in U.S. Department of Agriculture Circular 870, Efficient Use of Annual Plants on Cattle Ranges in the California Foothills.

cue—with their fibrous root systems, hold the soil in place better than do most forbs and, when dry, provide more forage because they do not weather so readily. Forbs—alfalfa or filaree, bur-clover, and others—are needed to improve the palatability and provide desirable variety in the green season. Light grazing usually results in too much grass in proportion to forbs, and heavy grazing in too many forbs in proportion to grass. Moderate grazing brings about the most desirable mixture.

Earlier Grazing Possible

Moderately grazed ranges produce new plant growth 2 or 3 weeks earlier than those grazed closely. The greater amount of old vegetation left on the ground under moderate grazing protects the young plants from drying winds and frosts, making possible earlier and

taller growth. Furthermore, much of the old vegetation is eaten with the young green forage, providing roughage during the winter. This roughage reduces scouring that may be caused by a straight new-grass diet.

How To Judge Moderate Grazing

The best time to judge final utilization of the range is in the fall, before the new growth starts. Checking utilization during the summer, before the end of the grazing season, however, shows what adjustments in stocking may be needed to obtain moderate use in the current season. In such early examinations, allowance has to be made for a decrease in vegetation that will be caused by weathering and further grazing before new growth starts.

Important in deciding to what level a range has been grazed is observing the amount of vegetation



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FIGURE 1.—Moderately grazed annual-type range in good condition should look like this in the fall when new growth starts. The blanket of old vegetation should average about 2 inches thick. It should have a patchy appearance but be thick enough in most places to hide small rocks, livestock trails, squirrel mounds, and other small areas of bare soil, when viewed from a distance of 20 feet or more.



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FIGURE 2.—Heavily grazed range looks smooth, slicked off, or closely mowed. Dry vegetation left on the ground averages less than 2 inches high. Small rocks, sticks, squirrel and gopher mounds, stock trails, and small areas of bare soil are plainly visible from more than 20 feet.

left. Under moderate grazing this material should appear about 2 inches tall when the new growth starts in the fall. Actually the old vegetation will be patchy and mottled in appearance and vary from place to place, so that in some spots it will be shorter and in others taller than 2 inches (fig. 1).

If grazing ends in summer or early fall, the remaining vegetation should average somewhat taller, between 2 and 3 inches, to allow for some breakdown and weathering up to the time the new vegetation starts to grow. Practically all the soil should be protected by this old growth. It should be dense enough to hide most soil mounds and rocks 2 or 3 inches in size when viewed from a distance of 20 feet. Bare soil and livestock trails should be

invisible beyond this distance. Plants under shrubs or around the edges of rocks should not be grazed closely.

In contrast, heavily grazed ranges usually have a smooth, slicked-off appearance, with many bare soil spots showing through the remaining dry vegetation (fig. 2).

Lightly grazed ranges have a less patchy appearance than moderately grazed areas, and the unused plant growth averages 3 or more inches in height (fig. 3). Almost all small objects and ground features, such as squirrel mounds, livestock trails, and small bare soil areas, are masked by unused plant growth.

Uniform Grazing Desirable

Grazing should be uniform over the entire range. Adequate fencing

and water are especially helpful in getting uniform use. At best, however, there will be variations in the degree of grazing on large range areas. The swales and ravine bottoms will invariably be grazed more closely than the adjoining hillsides because the lower areas usually remain green longer and support better forage plants than the open hillsides. Parts of the range near water, fence corners, and corrals are almost certain to be more heavily grazed than the rest of the range. The size of these closely grazed areas can be kept small by properly distributing the livestock.

Certain indicators, such as closely grazed hillsides, reveal when range grazing has been much too heavy.

As vegetation in the openings becomes scarce, cattle are forced to graze under shrubs and around and between limbs of dead and down trees and bushes. Appreciable use in these places indicates very heavy grazing of the range as a whole.

Range Condition the Result of Range Utilization

Range utilization refers primarily to the grazing of the current plant growth and is judged by the amount left on the ground. Condition reflects the present capacity of the range to produce forage and livestock and is indicated by the amount, vigor, and kind of range plants in the stand and by the absence or presence of erosion. Poor



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FIGURE 3.—Light grazing is not good economy. More of the vegetation should be converted into livestock products. Such light use favors the growth of coarse grasses at the expense of better plants like filaree and bur-clover, which give a desirable variety to the vegetation.



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FIGURE 4.—Annual-type range in poor condition produces sparse plant cover. The subsoil may show in places, and gullies mark the drainage channels.

range condition usually results from many years of too heavy grazing, which removes the protective cover of vegetation from the soil. Under moderate and light grazing enough vegetation is left on the ground to prevent losses in soil fertility. Weather and soil influence range production, but in good and bad years alike production depends largely on the condition of the range. Range not in good condition offers opportunities for improvement.

Production Determined by Range Condition

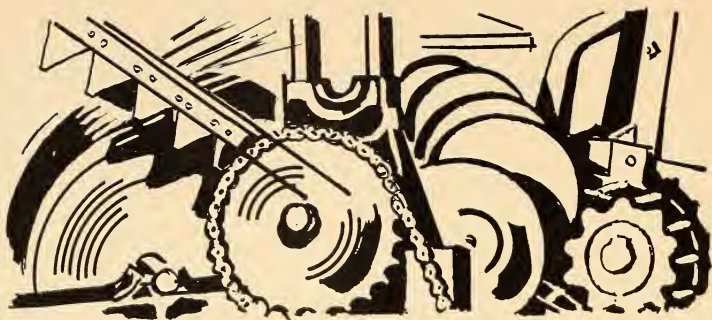
Ranges in good condition produce a relatively thick, even, vigorous cover of forage plants. (See photograph on cover.) On the soil surface is a thin layer of litter and decaying vegetation. No signs of active erosion are evident. Production from these ranges may be several times as great as from similar ranges in poor condition.

Annual-type ranges in poor condition usually provide very little grazing (fig. 4). Sheet erosion is usually evident, and active gullies are cut in drainage channels. The roots of shrubs and trees may be exposed on hillsides, and small rocks on the surface indicate that soil has been washed away. Small deposits of soil and debris are lodged on the upper side of grass clumps, rocks, stems of shrubs and trees. Light colored subsoil may be exposed.

Improvement of Ranges

Annual-type range not now in good condition can be improved by leaving more old vegetation on the ground each season than the amount recommended here for moderate grazing. This will build soil fertility and give progressively better range vegetation and greater livestock gains.

Moderate grazing and good overall range management will sustain high level production on annual-type ranges in good condition.



Don't take chances with FARM MACHINES

- Keep guards in place on power shafts, belts, and chains.
- Turn off power and block the machinery before unclogging or adjusting it.
- Don't climb over or around a running combine or thresher.
- Don't step over or under moving belts.
- Don't wear loose-fitting or torn clothing, or ragged gloves around moving machinery.
- Keep children away from machinery.
- Keep machinery in good repair.

Farm Machines will save you time . . .

If you use them the safe way



